

Trend Study 6-10-01

Study site name: Mahogany Hills.

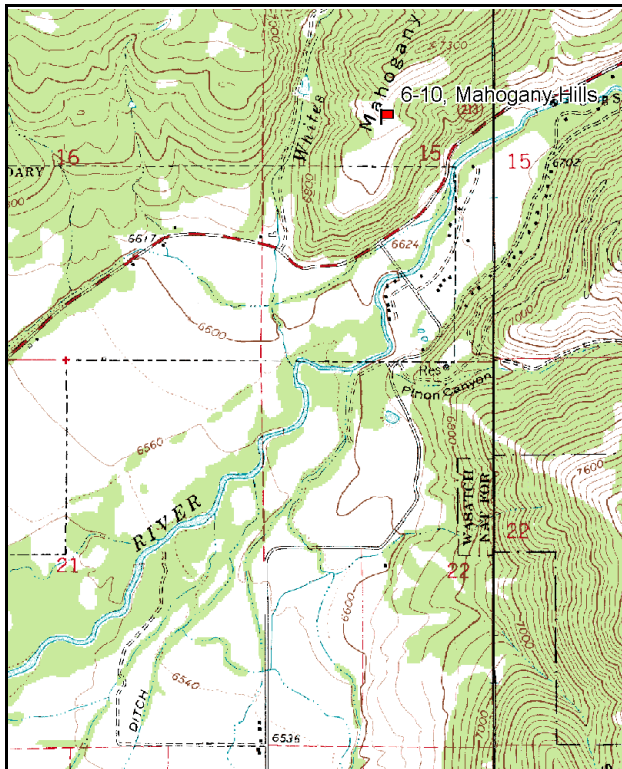
Vegetation type: Mountain brush.

Compass bearing: frequency baseline 162 degrees magnetic.

Frequency belt placement: Line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

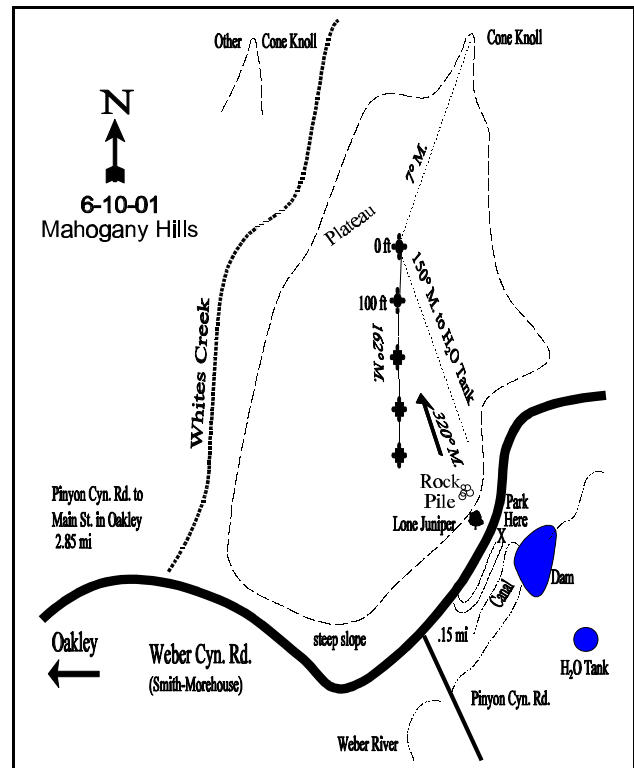
LOCATION DESCRIPTION

From Oakley, proceed up Weber Canyon watching for Pinyon Canyon Lane which is a right turn. From this road proceed 0.15 miles farther up Weber Canyon and park opposite a small irrigation canal dam. The main river dam to supply the canal is 100 yards upstream. From the river diversion walk up the steep slope at 273 degrees magnetic to a large lone juniper. From the lone juniper, a rock pile can be found 55 paces at 320 degrees magnetic. From the rock pile, the 0-foot baseline stake is approximately 80 paces at a bearing of 320 degrees magnetic. The 0-foot stake of the is marked by with browse tag #7952. To triangulate on the 0-foot stake when in the middle of plateau: from the stake to a cone-knoll to the north is 7 degree magnetic, from the stake to a water tank on the right at the mouth of Pinyon Canyon is 150 degrees magnetic.



Map Name: Kamas

Township 1S, Range 6E, Section 15



Diagrammatic Sketch

UTM 4509302 N 478425 E

DISCUSSION

Trend Study No. 6-10

The Mahogany Hills study was established in 1984 to sample critical big game winter range at the mouth of the Upper Weber River Canyon. Slope on this study varies from 5% to 12%, aspect is to the south. The site is best categorized as mountain big sagebrush-grass which also contains strong components of the mountain brush type. Elevation at the site is approximately 7,100 feet. Elk use has been moderate on the site, while deer use has been light. A pellet group transect read on the site in 2001 estimated 41 elk days use/acre (101 edu/ha), and 11 deer days use/acre (26 ddu/ha). There appears to be little or no livestock use.

Soil is a reddish color, moderately deep and well-drained. Effective rooting depth (see methods) was estimated at almost 13 inches. The soil texture is classified as a loam with a neutral soil reaction (6.7 pH). In 1996, this site had the highest amount of vegetative and litter cover and the lowest average soil temperature (58.4°F) of all sites within the management unit. It has the best site potential of all the sites on the unit. This area has a diverse plant composition, especially among grasses. Ground cover is excellent. No significant erosion can be detected. An erosion soil condition class assessment completed in 2001 showed soils to be stable.

Mountain big sagebrush dominates the browse component by contributing 45% of the browse cover in 2001. This species has gone through periods of high decadence, ranging from a high of 82% ('84) to a low of 40% ('96). In 2001, percent decadence slightly increased to 48%. Sagebrush density was estimated at 4,133 plants/acre during the initial sample in 1984, but has steadily declined since. In 2001, density was estimated at 1,920 plants/acre. Some of the decline in density is likely due to the greatly increased sample size used in 1996 and 2001 which better estimates browse populations. However, the dead age class has made up a significant portion of the population at 21% and 27% in 1996 and 2001 respectively. Density may continue to decline in the future with only half of the population being represented by mature plants in 2001. Recruitment from young plants is also low at less than 5% in all readings. Utilization on mountain big sagebrush has been moderate to heavy for almost all readings, and those classified with poor vigor have averaged 17% the last three sampling periods. Average leader growth on mountain big sagebrush was less than 2 inches in 2001.

The site also contains significant numbers of other valuable browse species that include mountain snowberry, serviceberry, true mountain mahogany, and antelope bitterbrush. These preferred species contribute an additional 43% of the browse cover in 2001. These species display moderate to heavy use, but low percent decadence and normal vigor. Annual leader growth averaged about 2½ inches for serviceberry and mountain mahogany in 2001. Also present are some less desirable shrubs such as stickyleaf low rabbitbrush and gray horsebrush. Stickyleaf low rabbitbrush has shown some dynamic changes in its density, but with very few young in the population, these increases are due mostly to the much larger sample size utilized in 1996, not an actual increase in the population size. Gambel oak density was estimated at 460 stems/acre in 1996, increasing to 1,120 stems/acre in 2001. A late snow storm and cold temperatures in June 2001 killed a lot of the leaf and meristematic biomass provided by oak.

Perennial grasses are a very prominent component on this site, as they provide on average about 34% cover for 1996 and 2001. This represents 86% of the herbaceous understory cover, and 53% of the total vegetative cover on the site in 2001. Of the 15 species of grasses identified on this site, three are seeded species more commonly found in meadows and pastures. Smooth brome is the most obvious example and also the most prevalent grass on the site. It has increased in abundance since 1984. Smooth brome accounts for 72% of the grass cover, 62% of the herbaceous understory cover, and 39% of the total vegetation cover on the site in 2001. Smooth brome is a sod-former and is highly shade tolerant. Within the mountain brush zone, smooth brome can totally dominate and exclude the herbaceous understory and exert a great deal of competition on

shrub recruitment, especially for sagebrush. Sandberg, Kentucky, and mutton bluegrasses are also fairly abundant on the site. Forbs also have a diverse composition and include several palatable and valuable species. Arrowleaf balsamroot, one-flowered helianthella, low penstemon, and redroot eriogonum are preferred forbs in many locations. Sum of nested frequency for perennial grasses and forbs decreased by 15% in 2001.

1984 APPARENT TREND ASSESSMENT

This is a quality site in good condition. Soil trend appears stable with little apparent erosion. A vigorous plant community provides good protection. Vegetative trend looks stable as well. In upcoming years the most important parameter to monitor will be age form and class structure of mountain big sagebrush.

1990 TREND ASSESSMENT

Compared to the wet years when this trend study was established in 1984, the data shows the effects of drought on the site. From the photographic comparisons, there is obviously less production for sagebrush and grass in 1990. The density of sagebrush has decreased, with the number of mature sagebrush increasing due to a decline in percent decadence. A majority of the population is moderately hedged, compared to 61% which were heavily browsed in 1984. Populations of the other palatable, but less common browse were unchanged. Most are now moderately hedged. This site has excellent vegetation and litter cover from high grass frequency and density. There is only 6% bare soil. Smooth brome is thick in the understory. There is a large diversity of forbs that provide a significant forage component. The site contains several palatable species for deer that inhabit the site year-round, especially this year due to its proximity to water. Elk use appears to be moderate in the winter.

TREND ASSESSMENT

soil - stable (3)

browse - stable for sagebrush (3)

herbaceous understory - stable (3)

1996 TREND ASSESSMENT

This site has some of the highest vegetative cover of any site in the area. Litter cover is very high at 75% with percent bare ground declining to less than 6%. Trend for soil is stable and in excellent condition. The browse trend is slightly down for mountain big sagebrush. This appears to be primarily from the very competitive and extremely abundant smooth brome, which is a sod-forming shade-tolerant grass. No seedlings were encountered on any reading and there are basically no safe sites for sagebrush seedlings to become established. The population is becoming more decadent and dying. Twenty-one percent of the population is currently dead. The other browse species are doing much better on the site. The herbaceous understory has improved since 1990 with values for nested frequency increasing for both grasses and forbs.

TREND ASSESSMENT

soil - stable (3)

browse - slightly down for the key browse species (mountain big sagebrush) and stable for the other species of browse (2)

herbaceous understory - slightly up (4)

2001 TREND ASSESSMENT

Trend for soil is stable. Vegetation and litter cover remain high and well disbursed over the site. Bare soil declined to less than 4%. The key browse, mountain big sagebrush, shows a continuing slightly downward trend. Density continues to decline, and decadence is moderately high at 48%. The number of young recruited into the population is low at only 20 plant/acre. This species may continue to decline in the future without an increase in reproductive success, which is unlikely due to the dominance of the site by smooth brome. The other palatable, preferred browse on the site appear stable. Serviceberry, true mountain mahogany, and bitterbrush show stable densities, low decadency, and normal vigor. They also have much more extensive root structure that is more deeply rooted and more competitive with drought conditions. Trend for browse is slightly down overall because mountain big sagebrush is the dominant browse on the site. Trend for the herbaceous understory is slightly down. Sum of nested frequency of perennial grasses and forbs declined by 15% in 2001.

TREND ASSESSMENT

soil - stable (3)

browse - slightly down (2)

herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --

Herd unit 06 , Study no: 10

| T y p e | Species | Nested Frequency | | | | Quadrat Frequency | | | | Average Cover % | |
|-----------------------------|------------------------|------------------|-------------------|------------------|------------------|-------------------|-----|-----|-----|-----------------|-------|
| | | '84 | '90 | '96 | '01 | '84 | '90 | '96 | '01 | '96 | '01 |
| G | Agropyron cristatum | 11 | 7 | 8 | 5 | 5 | 3 | 4 | 2 | .27 | .03 |
| G | Agropyron dasystachyum | 13 | 8 | 2 | 17 | 6 | 4 | 1 | 7 | .00 | .52 |
| G | Agropyron spicatum | _b 97 | _b 120 | _b 85 | _a 37 | 43 | 47 | 29 | 13 | 2.52 | .98 |
| G | Bromus inermis | _a 159 | _b 217 | _c 278 | _c 293 | 54 | 70 | 79 | 83 | 19.99 | 25.12 |
| G | Bromus tectorum (a) | - | - | - | 2 | - | - | - | 1 | - | .00 |
| G | Dactylis glomerata | 1 | - | 5 | 1 | 1 | - | 2 | 1 | .15 | .00 |
| G | Koeleria cristata | _a - | _a - | _b 33 | _b 19 | - | - | 12 | 6 | .82 | .83 |
| G | Melica bulbosa | - | - | 7 | - | - | - | 2 | - | .01 | - |
| G | Phleum pratense | 2 | - | - | - | 1 | - | - | - | - | - |
| G | Poa bulbosa | - | 8 | 9 | 3 | - | 3 | 4 | 2 | .33 | .06 |
| G | Poa fendleriana | _{ab} 55 | _a 35 | _{ab} 65 | _b 76 | 23 | 17 | 24 | 24 | 2.61 | 2.40 |
| G | Poa pratensis | 80 | 76 | 115 | 70 | 31 | 37 | 43 | 25 | 3.40 | 1.42 |
| G | Poa secunda | _a 129 | _{ab} 133 | _a 117 | _b 129 | 54 | 55 | 49 | 46 | 2.68 | 3.29 |
| G | Stipa columbiana | _b 40 | _b 25 | _a - | _a - | 18 | 10 | - | - | - | - |
| G | Stipa comata | _{ab} 8 | _{ab} 12 | _b 22 | _a 1 | 4 | 9 | 8 | 1 | .58 | .03 |
| Total for Annual Grasses | | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0.00 |
| Total for Perennial Grasses | | 595 | 641 | 746 | 651 | 240 | 255 | 257 | 210 | 33.41 | 34.70 |
| Total for Grasses | | 595 | 641 | 746 | 653 | 240 | 255 | 257 | 211 | 33.41 | 34.71 |

| T y p e | Species | Nested Frequency | | | | Quadrat Frequency | | | | Average Cover % | |
|---------------------------|---------------------------------|------------------|-----|------|------|-------------------|-----|-----|-----|-----------------|------|
| | | '84 | '90 | '96 | '01 | '84 | '90 | '96 | '01 | '96 | '01 |
| F | <i>Achillea millefolium</i> | 7 | 2 | 1 | - | 3 | 2 | 1 | - | .00 | - |
| F | <i>Agoseris glauca</i> | - | - | - | 6 | - | - | - | 2 | - | .01 |
| F | <i>Alyssum alyssoides</i> (a) | - | - | 14 | 23 | - | - | 6 | 10 | .05 | .27 |
| F | <i>Allium</i> spp. | a- | b28 | a3 | a4 | - | 18 | 3 | 3 | .01 | .01 |
| F | <i>Antennaria rosea</i> | 1 | - | 1 | - | 1 | - | 1 | - | .03 | - |
| F | <i>Arabis</i> spp. | ab8 | a1 | b17 | a- | 4 | 1 | 9 | - | .04 | - |
| F | <i>Arenaria</i> spp. | - | 4 | - | - | - | 2 | - | - | - | - |
| F | <i>Artemisia ludoviciana</i> | - | - | 3 | 3 | - | - | 1 | 1 | .38 | .15 |
| F | <i>Astragalus convallarius</i> | a4 | b32 | c61 | bc53 | 3 | 16 | 29 | 28 | 1.10 | .84 |
| F | <i>Balsamorhiza sagittata</i> | 10 | 4 | 5 | 9 | 6 | 3 | 3 | 5 | .57 | .92 |
| F | <i>Castilleja linariaefolia</i> | 6 | 3 | 11 | 2 | 2 | 2 | 6 | 2 | .52 | .12 |
| F | <i>Calochortus nuttallii</i> | - | 5 | - | - | - | 4 | - | - | - | - |
| F | <i>Cirsium undulatum</i> | 3 | 4 | 6 | 5 | 2 | 3 | 3 | 2 | .07 | .15 |
| F | <i>Comandra pallida</i> | a- | a2 | b10 | a2 | - | 1 | 5 | 1 | .08 | .16 |
| F | <i>Collinsia parviflora</i> (a) | - | - | 24 | 17 | - | - | 10 | 7 | .12 | .06 |
| F | <i>Crepis acuminata</i> | a- | c97 | b59 | b56 | - | 50 | 26 | 31 | .56 | .60 |
| F | <i>Erigeron pumilus</i> | 3 | 4 | 5 | 5 | 1 | 2 | 3 | 3 | .04 | .01 |
| F | <i>Eriogonum racemosum</i> | 7 | 11 | 10 | 9 | 4 | 5 | 5 | 6 | .24 | .13 |
| F | <i>Eriogonum umbellatum</i> | - | - | 6 | 5 | - | - | 3 | 2 | .12 | .06 |
| F | <i>Hackelia patens</i> | c88 | b38 | ab22 | a4 | 45 | 22 | 13 | 2 | .24 | .03 |
| F | <i>Helianthella uniflora</i> | a- | a- | b29 | b18 | - | - | 9 | 9 | 1.39 | 1.51 |
| F | <i>Holosteum umbellatum</i> (a) | - | - | b11 | a3 | - | - | 5 | 1 | .05 | .00 |
| F | <i>Lithospermum ruderales</i> | 3 | - | 7 | 6 | 2 | - | 3 | 3 | .21 | .12 |
| F | <i>Microsteris gracilis</i> (a) | - | - | a- | b15 | - | - | - | 7 | - | .13 |
| F | <i>Orthocarpus tolmiei</i> (a) | - | - | 1 | 7 | - | - | 1 | 3 | .00 | .04 |
| F | <i>Penstemon humilis</i> | b11 | b13 | ab5 | a- | 5 | 5 | 2 | - | .06 | - |
| F | <i>Phlox longifolia</i> | - | 3 | - | 3 | - | 1 | - | 1 | - | .00 |
| F | <i>Polygonum douglasii</i> (a) | - | - | b15 | a- | - | - | 9 | - | .04 | - |
| F | <i>Schoenocrambe linifolia</i> | - | - | 2 | 1 | - | - | 1 | 1 | .00 | .03 |
| F | <i>Senecio integerrimus</i> | a- | a- | a- | b15 | - | - | - | 8 | - | .10 |
| F | <i>Zigadenus paniculatus</i> | - | - | 3 | 3 | - | - | 2 | 1 | .01 | .03 |
| Total for Annual Forbs | | 0 | 0 | 65 | 65 | 0 | 0 | 31 | 28 | 0.28 | 0.51 |
| Total for Perennial Forbs | | 151 | 251 | 266 | 209 | 78 | 137 | 128 | 111 | 5.73 | 5.02 |
| Total for Forbs | | 151 | 251 | 331 | 274 | 78 | 137 | 159 | 139 | 6.01 | 5.53 |

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --

Herd unit 06 , Study no: 10

| T y p e | Species | Strip Frequency | | Average Cover % | |
|------------------|--|--------------------|-----|--------------------|-------|
| | | '96 | '01 | '96 | '01 |
| B | Amelanchier alnifolia | 24 | 31 | 3.34 | 2.84 |
| B | Artemisia tridentata vaseyana | 80 | 69 | 16.30 | 11.05 |
| B | Cercocarpus montanus | 1 | 3 | 1.31 | .18 |
| B | Chrysothamnus depressus | 4 | 6 | .30 | .27 |
| B | Chrysothamnus viscidiflorus viscidiflorus | 39 | 50 | 2.55 | 1.41 |
| B | Purshia tridentata | 9 | 10 | 1.49 | 1.10 |
| B | Quercus gambelii | 7 | 7 | .91 | 1.08 |
| B | Symphoricarpos oreophilus | 54 | 46 | 10.48 | 6.54 |
| B | Tetradymia canescens | 4 | 5 | .18 | .18 |
| Total for Browse | | 222 | 227 | 36.89 | 24.68 |

BASIC COVER --

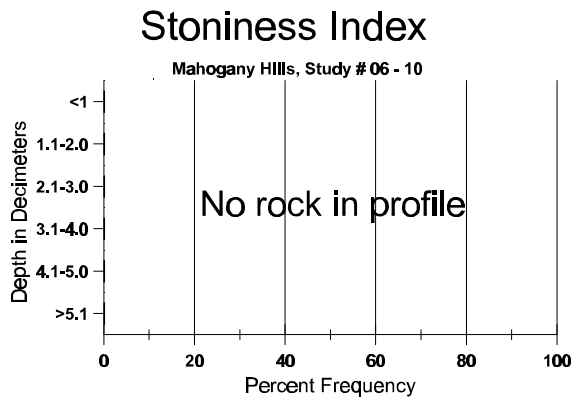
Herd unit 06 , Study no: 10

| Cover Type | Nested Frequency | | Average Cover % | | | |
|-------------|---------------------|-----|-----------------|-------|-------|-------|
| | '96 | '01 | '84 | '90 | '96 | '01 |
| Vegetation | 384 | 381 | 5.00 | 16.50 | 61.87 | 61.94 |
| Rock | 13 | 4 | .50 | 0 | .05 | .03 |
| Pavement | 27 | 19 | .50 | 0 | .09 | .14 |
| Litter | 400 | 393 | 80.50 | 76.00 | 75.13 | 70.69 |
| Cryptogams | 53 | 19 | .50 | .75 | .74 | .19 |
| Bare Ground | 98 | 52 | 13.00 | 6.75 | 5.88 | 3.95 |

SOIL ANALYSIS DATA --

Herd Unit 06, Study no: 10, Mahogany Hills

| Effective rooting depth (in) | Temp °F (depth) | PH | %sand | %silt | %clay | %0M | PPM P | PPM K | dS/m |
|---------------------------------|--------------------|-----|-------|-------|-------|-----|-------|-------|------|
| 12.7 | 58.4 (14.5) | 6.7 | 38.9 | 35.1 | 26.0 | 3.7 | 32.5 | 195.2 | .6 |



PELLET GROUP FREQUENCY --

Herd unit 06 , Study no: 10

| Type | Quadrat Frequency | |
|------|-------------------|-----|
| | '96 | '01 |
| Elk | 22 | 17 |
| Deer | 12 | 3 |

| Pellet Transect | |
|------------------------------|------------------------------|
| Pellet Groups per Acre 01 | Days Use per Acre (ha) 01 |
| 531 | 41 (101) |
| 139 | 11 (26) |

BROWSE CHARACTERISTICS --

Herd unit 06 , Study no: 10

| A G R E | Y R | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-----|------|--------------------|--------------------------------|----|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | | |
| Amelanchier alnifolia | | | | | | | | | | | | | | | | | | |
| Y | 84 | - | - | 1 | - | - | - | - | - | - | 1 | - | - | - | 66 | | 1 | |
| | 90 | - | 1 | - | - | - | - | - | - | - | 1 | - | - | - | 66 | | 1 | |
| | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 01 | 2 | - | - | - | - | - | - | - | - | 2 | - | - | - | 40 | | 2 | |
| M | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 96 | 2 | 9 | 6 | 1 | 1 | - | - | - | - | 13 | 5 | 1 | - | 380 | 33 | 19 | |
| | 01 | 14 | 4 | 6 | - | 4 | 6 | - | 1 | - | 35 | - | - | - | 700 | 33 | 35 | |
| D | 84 | - | - | 5 | - | - | - | - | - | - | 1 | - | 4 | - | 333 | | 5 | |
| | 90 | - | 2 | 1 | - | - | - | - | - | - | 2 | - | 1 | - | 200 | | 3 | |
| | 96 | - | 6 | 1 | - | 2 | - | - | - | - | 3 | 6 | - | - | 180 | | 9 | |
| | 01 | 1 | 2 | - | 1 | - | 1 | - | - | 2 | 7 | - | - | - | 140 | | 7 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '84 | | 00% | | | 100% | | | 67% | | | -33% | | | | | | | |
| '90 | | 75% | | | 25% | | | 25% | | | +53% | | | | | | | |
| '96 | | 64% | | | 25% | | | 04% | | | +36% | | | | | | | |
| '01 | | 23% | | | 34% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '84 | 399 | Dec: | 83% | | | |
| | | | | | | | | | | | | '90 | 266 | | 75% | | | |
| | | | | | | | | | | | | '96 | 560 | | 32% | | | |
| | | | | | | | | | | | | '01 | 880 | | 16% | | | |

| A G E | Y R | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total |
|--|--------|----------------------------|----|----|------------------|---|---|-------------------|---|---|----------------|-----|------|------|--------------------|--------------------------------|----|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | | |
| Artemisia tridentata vaseyana | | | | | | | | | | | | | | | | | | |
| Y | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 90 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - | 66 | | 1 | |
| | 96 | 3 | 2 | - | - | - | - | - | - | - | 3 | - | 2 | - | 100 | | 5 | |
| | 01 | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | 20 | | 1 | |
| M | 84 | 1 | 4 | 6 | - | - | - | - | - | - | 10 | - | 1 | - | 733 | 32 | 41 | |
| | 90 | 2 | 20 | 2 | 2 | - | - | - | - | - | 25 | - | 1 | - | 1733 | 27 | 30 | |
| | 96 | - | 50 | 22 | 4 | 2 | - | - | - | - | 75 | - | 3 | - | 1560 | 28 | 39 | |
| | 01 | 12 | 26 | 8 | - | - | 3 | - | - | - | 45 | 1 | 3 | - | 980 | 26 | 34 | |
| D | 84 | 2 | 17 | 32 | - | - | - | - | - | - | 35 | - | 13 | 3 | 3400 | | 51 | |
| | 90 | 5 | 17 | - | - | - | - | - | - | - | 15 | - | 1 | 6 | 1466 | | 22 | |
| | 96 | 3 | 30 | 17 | - | - | 6 | - | - | - | 35 | 2 | 14 | 5 | 1120 | | 56 | |
| | 01 | 7 | 26 | 9 | 2 | 2 | - | - | - | - | 29 | 3 | 6 | 8 | 920 | | 46 | |
| X | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | 720 | | 36 | |
| | 01 | - | - | - | - | - | - | - | - | - | - | - | - | - | 700 | | 35 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| | | '84 | | | 34% | | | 61% | | | 27% | | | -21% | | | | |
| | | '90 | | | 76% | | | 04% | | | 16% | | | -15% | | | | |
| | | '96 | | | 60% | | | 32% | | | 17% | | | -31% | | | | |
| | | '01 | | | 56% | | | 21% | | | 18% | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '84 | 4133 | Dec: | 82% | | | |
| | | | | | | | | | | | | '90 | 3265 | | 45% | | | |
| | | | | | | | | | | | | '96 | 2780 | | 40% | | | |
| | | | | | | | | | | | | '01 | 1920 | | 48% | | | |

| A G E | Y R | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-----|------|--------------------|--------------------------------|----|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | | |
| Cercocarpus montanus | | | | | | | | | | | | | | | | | | |
| Y | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 90 | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - | 66 | | 1 | |
| | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 01 | - | - | - | 1 | - | - | - | - | - | - | 1 | - | - | 20 | | 1 | |
| M | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 96 | - | - | - | 1 | - | - | - | - | - | - | 1 | - | - | 20 | 54 | 63 | |
| | 01 | - | - | 1 | - | - | - | - | - | - | 1 | 2 | - | - | 40 | 40 | 37 | |
| D | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 90 | - | - | 1 | - | - | - | - | - | - | - | - | - | 1 | 66 | | 1 | |
| | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 01 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '84 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '90 | | 00% | | | 50% | | | 50% | | | -85% | | | | | | | |
| '96 | | 00% | | | 00% | | | 00% | | | +67% | | | | | | | |
| '01 | | 00% | | | 67% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '84 | 0 | Dec: | 0% | | | |
| | | | | | | | | | | | | '90 | 132 | | 50% | | | |
| | | | | | | | | | | | | '96 | 20 | | 0% | | | |
| | | | | | | | | | | | | '01 | 60 | | 0% | | | |
| Chrysothamnus depressus | | | | | | | | | | | | | | | | | | |
| M | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 96 | 11 | - | - | - | - | - | - | - | - | - | 11 | - | - | 220 | 7 | 10 | |
| | 01 | 10 | - | - | - | - | - | - | - | - | - | 10 | - | - | 200 | 8 | 9 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '84 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '90 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '96 | | 00% | | | 00% | | | 00% | | | - 9% | | | | | | | |
| '01 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '84 | 0 | Dec: | - | | | |
| | | | | | | | | | | | | '90 | 0 | | - | | | |
| | | | | | | | | | | | | '96 | 220 | | - | | | |
| | | | | | | | | | | | | '01 | 200 | | - | | | |

| A G E | Y R | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|------|------|--------------------|--------------------------------|-------|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | | |
| Chrysothamnus viscidiflorus viscidiflorus | | | | | | | | | | | | | | | | | | |
| S | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 01 | 2 | - | - | - | - | - | - | - | - | - | 2 | - | - | - | 40 | | 2 |
| Y | 84 | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 66 | | 1 |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 96 | - | - | - | 1 | - | - | - | - | - | - | 1 | - | - | - | 20 | | 1 |
| | 01 | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 20 | | 1 |
| M | 84 | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 66 | 10 13 | 1 |
| | 90 | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 66 | 13 3 | 1 |
| | 96 | 72 | - | - | 14 | - | - | - | - | - | - | 85 | - | - | 1 | 1720 | 14 16 | 86 |
| | 01 | 81 | - | - | 2 | - | - | - | - | - | - | 83 | - | - | - | 1660 | 12 15 | 83 |
| D | 84 | 4 | - | - | - | - | - | - | - | - | - | 4 | - | - | - | 266 | | 4 |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 |
| | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 |
| | 01 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '84 | | 00% | | | 00% | | | 00% | | | -83% | | | | | | | |
| '90 | | 00% | | | 00% | | | 00% | | | +96% | | | | | | | |
| '96 | | 00% | | | 00% | | | 01% | | | - 3% | | | | | | | |
| '01 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '84 | 398 | Dec: | 67% | | | |
| | | | | | | | | | | | | '90 | 66 | | 0% | | | |
| | | | | | | | | | | | | '96 | 1740 | | 0% | | | |
| | | | | | | | | | | | | '01 | 1680 | | 0% | | | |
| Opuntia spp. | | | | | | | | | | | | | | | | | | |
| M | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | 6 | 9 | 0 |
| | 01 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '84 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '90 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '96 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '01 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '84 | 0 | Dec: | - | | | |
| | | | | | | | | | | | | '90 | 0 | | - | | | |
| | | | | | | | | | | | | '96 | 0 | | - | | | |
| | | | | | | | | | | | | '01 | 0 | | - | | | |

| A Y G R E | Form Class (No. of Plants) | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total | | | | | | | | | | |
|--|----------------------------|---------------------|----|---|------------------|--------------------|--------------------------------|-------------------|-------|---|----------------|-----|------|------|-----|-----|----|----|----|
| | | 1 | 2 | 3 | 4 | | 5 | 6 | | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | |
| Purshia tridentata | | | | | | | | | | | | | | | | | | | |
| Y | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 | |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 | |
| | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 | |
| | 01 | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - | 20 | | | 1 | |
| M | 84 | - | - | 7 | - | - | - | - | - | - | - | 4 | - | 3 | - | 466 | 23 | 39 | 7 |
| | 90 | 1 | 3 | - | - | - | - | - | - | - | - | 4 | - | - | - | 266 | 25 | 40 | 4 |
| | 96 | - | 4 | 5 | 2 | 1 | - | - | - | - | - | 12 | - | - | - | 240 | 16 | 36 | 12 |
| | 01 | - | 1 | 4 | 3 | - | 5 | - | - | - | - | 13 | - | - | - | 260 | 14 | 34 | 13 |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | | |
| '84 | | 00% | | | 100% | | | 43% | | | -43% | | | | | | | | |
| '90 | | 75% | | | 00% | | | 00% | | | -10% | | | | | | | | |
| '96 | | 42% | | | 42% | | | 00% | | | +14% | | | | | | | | |
| '01 | | 07% | | | 64% | | | 00% | | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '84 | 466 | Dec: | - | | | | |
| | | | | | | | | | | | | '90 | 266 | | - | | | | |
| | | | | | | | | | | | | '96 | 240 | | - | | | | |
| | | | | | | | | | | | | '01 | 280 | | - | | | | |
| Quercus gambelii | | | | | | | | | | | | | | | | | | | |
| Y | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 | |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 | |
| | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 | |
| | 01 | 4 | - | - | 1 | - | - | - | - | - | - | 3 | - | 2 | - | 100 | | | 5 |
| M | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| | 96 | 3 | 19 | 1 | - | - | - | - | - | - | - | 23 | - | - | - | 460 | 32 | 22 | 23 |
| | 01 | 11 | 31 | 2 | - | - | - | - | - | - | - | 14 | - | 30 | - | 880 | 22 | 18 | 44 |
| D | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 |
| | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 |
| | 01 | - | 7 | - | - | - | - | - | - | - | - | - | - | - | 7 | 140 | | | 7 |
| X | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 |
| | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 80 | | | 4 |
| | 01 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 240 | | | 12 |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | | |
| '84 | | 00% | | | 00% | | | 00% | | | | | | | | | | | |
| '90 | | 00% | | | 00% | | | 00% | | | | | | | | | | | |
| '96 | | 83% | | | 04% | | | 00% | | | +59% | | | | | | | | |
| '01 | | 68% | | | 04% | | | 70% | | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '84 | 0 | Dec: | 0% | | | | |
| | | | | | | | | | | | | '90 | 0 | | 0% | | | | |
| | | | | | | | | | | | | '96 | 460 | | 0% | | | | |
| | | | | | | | | | | | | '01 | 1120 | | 13% | | | | |

| A G E | Y R | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total |
|--|--------|----------------------------|----|---|------------------|---|---|-------------------|---|---|----------------|-----|------|------|--------------------|--------------------------------|----|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | | |
| Symphoricarpos oreophilus | | | | | | | | | | | | | | | | | | |
| S | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 96 | 5 | - | - | - | - | - | - | - | - | 5 | - | - | - | 100 | | 5 | |
| | 01 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| Y | 84 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - | 66 | | 1 | |
| | 90 | - | - | - | 3 | 2 | - | - | - | - | 5 | - | - | - | 333 | | 5 | |
| | 96 | 19 | 3 | - | 4 | - | - | - | - | - | 26 | - | - | - | 520 | | 26 | |
| | 01 | 2 | - | - | 1 | - | - | - | - | - | 3 | - | - | - | 60 | | 3 | |
| M | 84 | 16 | 1 | - | - | - | - | - | - | - | 17 | - | - | - | 1133 | 20 | 30 | 17 |
| | 90 | 4 | 1 | - | 1 | - | - | - | - | - | 4 | - | 2 | - | 400 | 22 | 37 | 6 |
| | 96 | 101 | 26 | - | 15 | - | - | - | - | - | 142 | - | - | - | 2840 | 19 | 32 | 142 |
| | 01 | 73 | - | - | 13 | - | - | - | - | - | 84 | 2 | - | - | 1720 | 18 | 36 | 86 |
| D | 84 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - | 66 | | 1 | |
| | 90 | - | 2 | 1 | 5 | - | - | - | - | - | 4 | 1 | - | 3 | 533 | | 8 | |
| | 96 | - | 1 | - | - | - | - | - | - | - | 1 | - | - | - | 20 | | 1 | |
| | 01 | - | 4 | - | - | - | - | - | - | - | 4 | - | - | - | 80 | | 4 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '84 | | 05% | | | 00% | | | 00% | | | + 0% | | | | | | | |
| '90 | | 26% | | | 05% | | | 26% | | | +63% | | | | | | | |
| '96 | | 18% | | | 00% | | | 00% | | | -45% | | | | | | | |
| '01 | | 04% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '84 | 1265 | Dec: | | 5% | | |
| | | | | | | | | | | | | '90 | 1266 | | | 42% | | |
| | | | | | | | | | | | | '96 | 3380 | | | 1% | | |
| | | | | | | | | | | | | '01 | 1860 | | | 4% | | |
| Tetradymia canescens | | | | | | | | | | | | | | | | | | |
| M | 84 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| | 96 | 3 | 1 | - | - | - | - | - | - | - | 4 | - | - | - | 80 | 17 | 18 | 4 |
| | 01 | 5 | - | - | - | - | - | - | - | - | 5 | - | - | - | 100 | 15 | 22 | 5 |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '84 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '90 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '96 | | 25% | | | 00% | | | 00% | | | +20% | | | | | | | |
| '01 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '84 | 0 | Dec: | | - | | |
| | | | | | | | | | | | | '90 | 0 | | | - | | |
| | | | | | | | | | | | | '96 | 80 | | | - | | |
| | | | | | | | | | | | | '01 | 100 | | | - | | |